

AEROMONAS INFECTIONS

Animal Group(s) Affected	Transmission	Clinical Signs	Severity	Treatment	Prevention and Control	Zoonotic
Fish, Amphibians, Reptiles, Waterfowl, Marine mammals	Horizontal transmission, close contact with infected individual, ingestion of bacterium, direct inoculation through wounds, especially from contaminated water. Snake mite (<i>Ophionyssus natricis</i>) capable of transmitting bacteria	Acute mortality, dermal hyperemia, skin wounds, pustular dermatitis, stomatitis, fasciitis, pneumonia, gastrointestinal disease	Mild to severe depending on immune status, and route of infection	Antibiotics, appropriate wound management, supportive care	Ubiquitous in environment and may comprise part of the normal intestinal flora. Opportunistic infection. Prevention through good environmental and personal hygiene practices, optimal husbandry, UV irradiation or ozonation of water; vaccination for <i>Aeromonas salmonicida</i>	Yes

Fact Sheet compiled by: Douglas P. Whiteside

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Susceptible animal groups: Fish (especially salmonids, goldfish, carp), amphibians, reptiles, waterfowl, marine mammals.

Causative organism: *Aeromonas hydrophila*, *A. salmonicida*, *A. shigelloides*, *A. formicans*, *A. sobria*, and *Aeromonas* sp. of which of the at least seven recognized species, four of which are considered more pathogenic. It is a Gram negative, facultative anaerobic, polar flagellated bacterial rod.

Zoonotic potential: Yes, but also direct environmental exposure. Opportunistic zoonotic pathogen especially in immunocompromised or debilitated individuals.

Distribution: Worldwide distribution. Common in fresh and salt water environments, particularly with increased detritus or sewage and carried by some invertebrate and vertebrate species.

Incubation period: 24-48 hours

Clinical signs:

Fish: Acute mortality, septicemia, exophthalmia, hemorrhages in skin, fins, oral cavity, and muscles, skin ulceration. Bloody discharge from vents

Amphibians: Acute mortality, septicemia, anorexia, ventral erythema with cutaneous hemorrhage especially ventral thighs, edema in subcutis, anasarca, hemorrhagic ulcerations of digit tips and jaw. May feature digital amputation due to vasoconstriction, secondary to septicemia.

Reptiles: Acute mortality, septicemia, pneumonia, ulcerative stomatitis particularly in snakes, dermal ecchymoses, epidermal ulceration, anorexia, listless, labored respirations, harsh respiratory sounds, mouth gaping, steady decline in status

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<p>Waterfowl: Upper respiratory tract infections, salpingitis, enteritis, septicemia, localized abscessation, and arthritis</p> <p>Marine mammals: Septicemia, pneumonia</p> <p>Humans: Gastroenteritis, watery diarrhea which can be chronic in nature, septicemia, pustular dermatitis, cellulitis, necrotizing fasciitis, pneumonia, peritonitis, cholecystitis, bacteremia and hepatitis.</p>
<p>Post mortem, gross, or histologic findings</p> <p>Fish: Cavitating dermal ulceration and myositis, exophthalmus, serosanguineous anemia, ascites commonly observed. Splenomegaly and swollen kidneys are common. Multifocal areas of necrosis in the spleen, liver, kidney and heart with numerous rod shaped bacteria are observed on histology.</p> <p>Amphibians: Ventral erythema, hepatosplenomegaly, ascites, anasarca, pulmonary congestion, petechiae and ecchymoses in skeletal muscle, coelomic serosa, kidneys, and spleen</p> <p>Reptiles: Dermal hyperemia, ulceration, stomatitis, hepatomegaly, exudates in trachea and lungs, ascites, splenomegaly, renomegaly, intestinal edema</p> <p>Waterfowl: Salpingitis, peritonitis, arthritis, or septicemia</p> <p>Marine mammals: Severe pneumonia, septicemia, ulcerative dermatitis</p> <p>Humans: Pustular dermatitis, cellulitis, necrotizing fasciitis, osteomyelitis, pyomyositis, pneumonia, bacteremia, peritonitis and meningitis</p>
<p>Diagnosis: Isolation on routine media (heart infusion agar, blood agar, MacConkey, Tryptone soya agar) with subsequent identification, commercial systems, molecular identification (PCR). Results must be taken in context of clinical signs and pathologic findings.</p>
<p>Material required for laboratory analysis: Transport media (Cary-Blair medium is most suitable). Transport at room/environmental temperature yields greatest recovery.</p>
<p>Relevant diagnostic laboratories: Any laboratory that can perform bacteriological isolation and identification.</p>
<p>Treatment: Antibiotic selection is dependent on susceptibility testing. In general, it is susceptible to aminoglycosides, carbapenems, extended spectrum cephalosporins, azithromycin, monobactams, nitrofurans, extended spectrum penicillins (piperacillin, piperacillin-tazobactam), phenicols, fluoroquinolones, and tetracyclines, with variable susceptibility to potentiated antifolates (trimethoprim-sulfas). <i>Aeromonas</i> spp. produce strong <i>B</i>-lactamases, so they resistant to narrow spectrum penicillins (e.g. amoxicillin, ampicillin, ampicillin-sulbactam, ticarcillin, oxacillin, penicillin) and cephalosporins (e.g. cefoxitin), sulfamethoxazole, erythromycin, and clarithromycin.</p>
<p>Prevention and control: Maintain good environmental hygiene and optimal husbandry conditions; ultraviolet irradiation or ozonation of water sources; proper food storage and follow safe cooking recommendation; follow all wound care procedures recommended by veterinarian or physician; practice good hygiene; wash hands often.</p>
<p>Suggested disinfectant for housing facilities: UV irradiation or ozonation of water sources is possible. Most disinfectants are effective such as sodium hypochlorite, chlorhexidine, quaternary ammonium products, phenolics, Virkon®</p>
<p>Notification: None</p>
<p>Measures required under the Animal Disease Surveillance Plan: None</p>
<p>Measures required for introducing animals to infected animal: Good quarantine procedures. Tank water to discharge or if recirculating, ensure appropriate treatment and disinfection. Ideally isolate infected animals for treatment.</p>
<p>Conditions for restoring disease-free status after an outbreak: Environmental hygiene, povidone iodine washing of fish eggs.</p>
<p>Experts who may be consulted:</p>

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